

85235

S/048/60/024/006/028/030/XX
B013/B067

24.3100

AUTHOR:

Kislyak, G. M.

TITLE:

Phosphorescence²¹ of Some Solvents and Its Effect on the
Absorption Spectra of Organic Phosphors

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya,
1960, Vol. 24, No. 6, pp. 766 - 768

X

TEXT: In a previous paper (Ref. 1) the author pointed out that an addition of formic acid to aqueous tripaflavin solutions causes a considerable distortion of the absorption spectrum and changes the rule governing the dampening of phosphorescence. In the present paper, a similar effect was observed also in other acridine dyes - acridine yellow and riboflavin (Fig. 1). Since such an effect of formic acid (partly also of acetic acid) could be observed only in acridine dyes, the author studied the reason of this effect in series of experiments (Figs. 2 and 3). On the basis of these studies the author explains this effect of formic acid in the following way: As is known, formic acid is the strongest carboxylic acid with the highest ionization constant

Card 1/2

KISLYAK, G. M.

34434

S/185/61/006/006/012/030
D299/D304

24.3500 (1137, 1138)

AUTHOR: Kyslyak, H.M.

TITLE: On concentration quenching of phosphorescence

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 6, 1961,
774 - 776

TEXT: The substances used in the experiments were tripaflavin and fluorescein in various solvents, excited by monochromatic light of the visible region of the spectrum, at liquid oxygen temperature. A figure shows the curves -- duration τ of phosphorescence of tripaflavin in 85 % formic acid versus the wavelength λ of the exciting light, for various solute (dye) concentrations. From the figure it is evident that a change in solute concentration leads to a change in the duration of phosphorescence in both the Stokes and anti-Stokes spectral regions. On the other hand, the quenching of phosphorescence is not affected (neither in the Stokes, nor in the anti-Stokes region) by a change in concentration (by a factor of 10^4) and in wavelength. It was found that the concentration quenching of the phosphorescence can be explained by resonance migration

Card 1/2

On concentration quenching of ...

S/185/61/006/006/012/030
D299/D304

of energy from the excited to the not-excited molecules. The fact that concentration quenching of phosphorescence can be best explained by the theory of energy migration, is also confirmed by experiments with fluorescein in sulphuric acid. In this case, the duration τ of phosphorescence (on excitation by ultraviolet light), is 2.4 seconds; it remains constant for activator concentrations of $1 \cdot 10^{-3}$ to $1 \cdot 10^{-6}$ gm/cm³. The constancy of τ can be explained by the absence of energy migration. In conclusion, the concentration quenching of phosphorescence of the substances investigated, is confirmed by the theory of resonance migration of energy (developed by S.I. Vavilov and co-workers). There are 2 figures and 7 references: 6 Soviet-bloc and 1 non-Soviet-bloc. The reference to the English-language publication reads as follows: G.N. Lewis, D. Lipkin, T.T. Magel, J. Am. Chem. Soc., 63, 3005, 1941. ✓

ASSOCIATION: Poltavs'kyi pedahohichnyy instytut im. V.H. Korolenka
(Poltava Pedagogical Institute im. V.H. Korolenko)

Card 2/2

S/185/62/007/012/008/021
D234/D308

AUTHORS:

Kyslyak, ^{G.M.}~~Y.M.~~ and Lysenko, H.M.

TITLE:

Phosphorescence of boron-phthalic
luminophores

PERIODICAL:

Ukrayins'kyy fizychnyy zhurnal, v. 7,
no. 12, 1962, 1309 - 1313

TEXT:

The decrease of phosphorescence with time over +1600 to - 1830C was exponential in the whole range, except when the luminophore was prepared from unpurified boric acid. The duration of phosphorescence decreased with increasing temperature. The authors also repeated M.D. Khalupovskiy's experiments (Opt. i spektr., 12, 81, 1962) but did not confirm his results. The activation energy calculated from the results is 0.105 ev between +1600 and +60°C and about 0 below -200C. In the intermediate range both α - and β - phosphorescence is observed. This is in good agreement with A. Yablonskiy's three-level model. The intensity is described well by $J_0/(1+Ce^{-E/kT})$.

Card 1/2

Phosphorescence ...

S/185/62/007/012/008/021
D234/D308

The extinction energies determined from this formula are 0.80 ev
(+150° to +100° C) and 1.40 ev (+100 to +60° c). There are
3 figures. ✓

ASSOCIATION: Poltavs'kyi pedinstytut (Poltava
Pedagogical Institute)

SUBMITTED: June 12, 1962

Card 2/2

S/185/62/007/012/009/021
D234/D308

AUTHORS:

Kislyak, G.M. and Lysenko, H.M.

TITLE:

The effect of temperature on the phosphorescence of phthalic acid in alums

PERIODICAL:

Ukrayins'kyy fizychnyy zhurnal, v. 7,
no. 12, 1962, 1314 - 1316

TEXT:

The temperature range was $+125^{\circ}$ to -183°C , and the activator concentration $1/1000 \text{ g/g}$ and $1/100 \text{ g/g}$. τ was constant between -183° and -160°C for $1/1000 \text{ g/g}$ only, and decreased with increasing temperature. Temperature variations affected τ to a greater extent when the concentration of activator was higher. The activation energy was 0.17 ev ($1/1000 \text{ g/g}$) and 0.15 ev ($1/100 \text{ g/g}$); α - phosphorescence was observed between $+125$ and $+70^{\circ}\text{C}$, β - phosphorescence below -10°C , and both together between $+70$ and -10°C . The extinction energies were determined and found to increase considerably with the activator concentration.

Card 1/2

The effect of temperature ...

S/185/62/007/012/009/021
D234/D308

There are 4 figures.

ASSOCIATION:

Poltava's'kyy pedinstytut (Poltava
Pedagogical Institute)

SUBMITTED:

May 29, 1962

Card 2/2

K. SLYAK, G. M.

L 18943-63

EPR/EWP(j)/EPF(c)/EWT(m)/BDS

ASD

Ps-4/Pc-4/Pr-4

RM/WW/HAY

ACCESSION NR: AP3003820

S/0185/63/008/007/0772/0778

AUTHOR: Ky*slyak, G. M.; Ly*senko, G. M.

TITLE: On the law of phosphorescence damping of organic substances

SOURCE: Ukrayins'ky y fizy*chny*y zhurnal, v. 8, no. 7, 1963, 772-778

TOPIC TAGS: phosphorescence decay, organic phosphors, boro-fluorescein, phosphorescence, fluorescein, afterglow, boric acid, terephthalic acid, anthranilic acid

ABSTRACT: Deviations of phosphorescence decay (damping) curves from exponential were investigated for boro-fluorescein. Others had previously observed these deviations from various phosphors and had ascribed them to such causes as the presence of many sublevels of the metastable state, recombination glow, glow of the activator base, the effects of high activator concentration, etc. For the case of boro-fluorescein, it was shown that the non-exponential behavior of the decay is due to the presence of afterglow of impure boric acid and to contamination of the activator. [Abstracter's note: The authors based their conclusions on data obtained with a fluorescein manufactured by MERCK. The domestic product had to be purified before it yielded decent results, but even then the results were not wholly

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L 18943-63

ACCESSION NR: AP3003820

satisfactory. 7 The decay time constants were of the order of 2 seconds. 3

The results of the investigation of the effect of activator concentration and the thickness of the phosphor layer did not agree with data in the literature.

It is concluded that the phosphorescence decay of boro-fluorescein phosphors (as well as terephthalic, anthranilic and other acids) is exponential from -183 to 140C with the exception of the range -70 to -50C. This exception had been previously noted by the authors (Eleventh All-Union Conference on Luminescence, Minsk, 1962.) Orig. article has 6 figures.

ASSOCIATION: Poltavsky*y pedagogichny*y institut im. V. G. Korolenka (Poltava Teachers Institute)

SUBMITTED: 12Dec62

DATE ACQ: 08Aug63

ENCL: 00

SUB CODE: PH

NO REF SOV: 015

OTHER: 009

Card 2/2

L 9859-63

ACCESSION NR: AP3001345

EWI(1)/EWI(m)/BDS--AFFTC/ASD/ESD-3/SSD--RM/MAY/IJP(C)

S/0048/63/027/006/0717/0719

AUTHOR: Kislyak, G. M.; Ly*senko, G. M.

TITLE: Influence of temperature on the phosphorescence²¹ of organic substances
[Report of the Eleventh Conference on Luminescence held in Minsk from 10 to 15
September 1962]

SOURCE: AN SSSR. Izv. Seriya fizicheskaya, v. 27, no. 6, 1963, 717-719

TOPIC TAGS: phosphorescence of organic molecules, metastable levels, sodium
fluorescein, sulfanilic acid, anthranilic acid

ABSTRACT: In recent years there have been published many data that are not
consistent with the Jablonski, A. (Z. Phys. 94, 38, 1935) three-level diagram
with only one metastable level for organic molecules. Hence some investigators
have proposed the existence of two or more metastable levels, between which
nonradiative transitions may occur. The purpose of the present study was to
obtain on the basis of measurements at different temperatures experimental proof
of the existence of two or more metastable levels. The measurements were carried
out by means of a special set-up designed to detect weak fluxes. The specimens

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L 9859-63

ACCESSION NR: AP3001345

were fluorescein ¹ uranin, sulfanilic and anthranilic acids ² in boric acids and ptash alum beads and crystalline sulfanilic and anthranilic acids. The organic phosphors were frozen in liquid oxygen in a special flask. The phosphorescence decay curves were recorded on negative film by one of the vibrators of an eight-loop oscillograph connected via an amplifier to the output of the FEU-19 photomultiplier viewing the phosphor. The decay constants were calculated in the usual manner on the assumption of an exponential decay curve. The decay constant versus temperature curves for uranin and sulfanilic acid in boric pellets are presented. Analysis of the data leads to the inference that the phosphorescence mechanism of uranin and sulfanilic and anthranilic can be explained on the basis of the Jablonski diagram with the introduction of a second metastable level from which there occur direct radiative transitions to the ground state. Orig. art. has: 2 figures.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 01Jul63

ENCL: 00

SUB CODE: PH

NR REF SOV: 005

OTHER: 005

FR AID: 29AUG63

ja/nh
Card 2/2

KISLYAK, G.M. [Kysliak, H.M.]

Concentration quenching of phosphorescence. Ukr.fiz.shur. 6 no.6:774-
776 N-D '61. (MIRA 16'5)

1. Poltavskiy pedagogicheskii institut im. Korolenko.
(Phosphorescence)

KISLYAK, G.M. [Kysliak, H.M.]; LYSENKO, G.M. [Lysenko, H.M.]

Law of phosphorescence damping in organic substances. Ukr. fiz.
zhur. 8 no.7:772-778 J1 '63. (MIRA 16:8)

1. Poltavskiy pedagogicheskiy institut im. Korolenko.
(Phosphorescence)

KISLYAK, G.M. [Kysliak, H.M.]; LYSENKO, G.M. [Lysenko, H.M.]

Some luminescent properties of organic dyes. Ukr. fiz. zhur.
8 no.8:900-906 Ag '63. (MIRA 16:11)

1. Poltavskiy pedagogicheskiy institut im. Korolenko.

ACCESSION NR: AP4017395

S/0185/64/009/002/0160/0165

AUTHOR: Iy*senko, G. M.; Ky*slyak, G. M.

TITLE: On the phosphorescence of organic phosphors with two metastable levels

SOURCE: Ukrayins'ky'y fizy*chny'y Zhurnal, V. 9, no. 2, 1964, 160-165

TOPIC TAGS: phosphorescence, phosphorescence decay, phosphorescence kinetics, organic phosphor, organic phosphor metastable level, metastable organic level, organic substance luminescence, fluorescence, fluorescent level

ABSTRACT: Equations of the kinetics of phosphorescence of organic phosphors with two metastable levels, Fig. 1 of Enclosure 01, are discussed. These are important, because the Jablonskiy Scheme /Ref. not given/, which is based on a one metastable level system, is not applicable to a large number of measurements of phosphorescence of organic molecules. If transitions between the metastable levels (M_1 & M_2) and between the metastable levels and the normal (N) and fluorescent (F) are permitted, the phosphorescence damping curve should not deviate from exponential. Even the allowing of fluorescent

Card 1/3 2

ACCESSION NR: AP4017395

transitions does not lead to a deviation from exponential damping. The equations are analogous to the corresponding equations for organic phosphors with one metastable level. Orig. art. has 45 numbered equations and 2 figures.

ASSOCIATION: Poltaus'ky'y Pedinsty*tut im. V. G. Korolenka
(Poltava Pedagogical Institute)

SUBMITTED: 06Jul63

DATE ACQ: 19 Mar64

ENCL: 01

SUB CODE: PH

NO REF SOV: 008

OTHER: 001

Card 2/3 2

ACCESSION NR: AP4043862

S/0139/64/000/004/0013/0016

AUTHORS: Kislyak, G. M.; Ly*senko, G. M.

TITLE: On the phosphorescence of benzoic acid

SOURCE: IVUZ. Fizika, no. 4, 1964, 13-16

TOPIC TAGS: phosphorescence, phosphorescence quenching, benzoic acid, alcohol, water, diethyl ether, carbon tetrachloride, boric acid

ABSTRACT: In spite of the agreement on the part of most workers that phosphoresence quenching of benzoic acid obeys an exponential law, the authors have observed, in a study of the effect of the temperature and different solvents on the phosphorescence of several organic substances (including benzoic acid), certain deviations from the exponential law. They consequently studied in greater detail the phosphorescence of benzoic acid in different alcohols, water,

Card 1/2

Card 2/2

L 15140-65 EWT(1)/EEC(b)-2 IJP(c)/SSD/AFWL GG

ACCESSION NR: AP4046662

S/0185/64/009/009/1001/1008

AUTHOR: ~~Kisljak, G. M. (Kisljak, G. M.); Lebedev, M. A.~~
~~(Lebedev, M. A.); Bychenko, G. M.~~

TITLE: The anti-Stokes phosphorescence of organic phosphors B

SOURCE: Ukrayins'ky* y fizy*chny*y zhurnal, v. 9, no. 9, 1964,
1001-1008

TOPIC TAGS: phosphorescence, phosphorescence duration, phosphorescence yield, metastable level population, anti Stokes spectrum, organic phosphor, anti Stokes phosphorescence

ABSTRACT: The effect of the wavelength of an exciting light on the duration and the relative yield of phosphorescence was investigated. It was found that shifting to the light of the anti-Stokes region of the spectrum results in a decrease in the duration and relative yield of phosphorescence, followed by a change in population of the metastable level. Such changes in some luminescence characteristics in the anti-Stokes region of the spectrum can not be explained by inactive absorption of nonluminescent admixtures in solutions, since this phenomenon is observed in organic phosphors of different purities.

Card 1/3

L 15110-65

ACCESSION NR: AP4046662

The most thorough purification of solvents and activators does not affect the shape of curves representing the dependence of the duration and relative yield of phosphorescence on the wavelength of an exciting light. It also can not be explained by the presence of dimers and polymers since such dependence is observed with frozen solutions of organic phosphors of different concentrations. A comparison of all results obtained leads to the conclusion that the decrease in duration and relative yield of phosphorescence in the anti-Stokes region of the spectrum can be explained by extinction of the second kind, the extinction that occurs when molecules are in the excited state. The conclusion is also drawn that activation energy is needed for a molecule to pass into a metastable state. In addition, transitions from high oscillation levels of the unstable state into a metastable state have greater probabilities than transitions from low oscillation levels. The extinction of phosphorescence, whether due to Stokes or anti-Stokes excitation, proceeds according to an exponential law. Orig. art. has: 7 figures, 5 formulas, and 2 tables.

ASSOCIATION: Poltava'ky'y pedinsty*tut (Poltava Pedagogical Institute)

Card 2/3

L 15110-65

ACCESSION NR: AP4046662

SUBMITTED: 24Dec63

ENCL: 00

SUB CODE: 010P

NO REF SOV: 012

OTHER: 001

Card 3/3

KISLYAK, G.M. [Kysliak, H.M.]; LYSENKO, G.M. [Lysenko, H.M.]

Phosphorescence of boron-uranium phosphors. Ukr. fiz. zhur. 9
no.11:1256-1260 N '64 (MIRA 18:1)

1. Poltavkiy pedagogicheskiy institut im. Korolenko.

LYSENKO, G.M. [Lysenko, H.M.]; KISLYAK, G.M. [Kysliak, H.M.]

Law of the extinction of phosphorescence of organophosphors
with two metastable levels. Dop. AN URSR no.2:200-203 '65.
(MIRA 18:2)

1. Poltavskiy pedagogicheskiy institut.

KESLYAK, G.M. [Kysliak, H.M.]; LYSENKO, G.M. [Lysenko, H.M.]

On the phosphorescence of terephthalic acid. Ukr. fiz. zhur.
10 no.9:1015-1018 S '65. (MIRA 18:9)

1. Poltavskiy pedagogicheskly institut im. Korolenko.

LOI251-66

ACCESSION NR: AP5020812

UR/0048/65/029/008/1413/1416

AUTHOR: ^{44,55} Kislyak, G. M.; ^{44,56} Lysenko, G. M.

TITLE: ^{71,44,55} Persistence of phosphorescence in different regions of the emission spectrum /²⁰ Report, 13th Conference on Luminescence held in Khar'kov 25 June to 1 July 1964/ ^{44,55}

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 8, 1965, 1413-1416

TOPIC TAGS: luminescence spectrum, phosphorescence, solution property, time constant

ABSTRACT: The authors have measured the duration of phosphorescence at different wavelengths for a large number of organic compounds in different solvents and at different temperatures, because the data in the literature are contradictory. The authors have described their apparatus and experimental technique elsewhere (Ukr. fiz. zh., 7, 1309, 1962). Data are tabulated for tryptaflavine in ethyl alcohol and in 85% formic acid and for fluorescein in acidified n-butyl alcohol and in boric acid, all at -183°C , and for uranin in potash alum at 25°C ; and data are presented graphically for fluorescein in acidified methyl alcohol and in sulfuric acid at -183°C and for a boron uranin phosphor at 25°C . In all these cases the

Card 1/2

LQ251-66

ACCESSION NR: AP5020812

duration of the phosphorescence decreased with increasing wavelength, except that in the long wavelength half of the boron uranin phosphor spectrum the duration of phosphorescence was nearly independent of the wavelength. Other more complicated behavior was observed with some other compounds, however. The authors consider the most likely explanation for the decrease of the duration of phosphorescence with increasing wavelength to be that the three levels of the model of A. Jablonski (Z. Phys., 94, 38, 1935) are actually broad bands consisting of continuous sets of sublevels and that the transition probability from a sublevel to the ground state decreases with increasing excitation energy of the sublevel. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: OP, GC

NO REF SOV: 011

OTHER: 006

Card

2/2

L C8132-67 EWT(1)/EWT(m)/EWP(j) WW/RM

ACC NR: AP6033524

SOURCE CODE: UR/0185/66/011/010/1101/1108

AUTHOR: Lysenko, H. M. --Lysenko, G. M.; Kyslyak, H. M. --Kislyak, G. M.

ORG: Poltava Pedagogical Institute (Poltav'skyy pedinstytut)

TITLE: Effect of reabsorption on the law of organoluminophor^{4/}phosphorescence⁸
decay

SOURCE: Ukrayins'kyy fizychnyy zhurnal, v. 11, no. 10, 1966, 1101-1108

TOPIC TAGS: adsorption spectrum, emission spectrum, luminescence, phosphorescence, organic phosphorus compound, afterglow, phosphorescence decay

ABSTRACT: Overlap of absorption and emission spectra of organic phosphors leads to considerable change in some luminescence characteristics. However, the authors' attempts to obtain a change in the duration and the law of phosphorescence decay were unsuccessful because of reabsorption, varying layer thickness, and activator concentration. Binary solutions were used in the attempt. In the case when the afterglow spectra of binary solution components lie in a single spectral region, the decay curve breaks up into two exponents, each of which

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L 08132-67

ACC NR: AP6033524

characterizes the course of afterglow decay of a separate activator. In the case of binary donor-acceptor mixtures, in which favorable conditions are set up for the reabsorption of phosphorescence energy of the donor by the acceptor, a good experimental corroboration is obtained for the theoretical calculations on the increase in duration of phosphorescence. However, the decay curve breaks up into two exponents in this case, too. Under some assumptions, the theoretical nonexponential law of decay, as in the case of fluorescence, is reduced to the sum of two exponents, which is corroborated experimentally. The durations of afterglow of the donor and acceptor obtained in this case agree with the experimental results. Orig. art. has: 3 figures, 12 formulas, and 1 table. [Based on authors' abstract]

SUB CODE: 20/ SUBM DATE: 29Nov65/ ORIG REF: 033/ OTH REF: 012/

Card 2/2 nst

VERTSWER, V.H.; KISLYAK, I.S.

Hemorrhagic crises following chicken pox. *Pediatrics* no.8:91-93
'62. (MIRA 15:10)

1. Iz Detskoy klinicheskoy bol'nitsy No. 1 i kafedry fakul'tetskoy
pediatrii II Moskovskogo gosudarstvennogo meditsinskogo instituta.
imeni N.I.Pirogova.

(CHICKEN POX)
(HEMORRHAGE)

SHUGAL, Ya.G.; RYABOV, O.M.; BOCHAROVA, T.V.; KISLYAK, I.M.; KOBEL'KOVA,
A.M.; LYKOV, A.D.; MANYAKHINA, O.V.; SHLENNOVA, T.G.; YAGUPOVA,
Ye.I.; IVANOV, N.A.; RYBKIN, I.P.; KHOKHLOVA, P.Ye.; KHEUNTAYEVA,
A.S.; PROLOVA, M.I.; RAKOV, P.M., red.; MARCHENKO, V.A., red.;
KOLPAKOV, B.T., red.; DEMINA, V.N., red.; MELENT'YEV, A.M., tekhn.
red.

[Soviet commerce of the R.S.F.S.R.; a statistical manual] Sovet-
skaya torgovlia v RSFSR; statisticheskii sbornik. Moskva, Gos.
stat. izd-vo, 1956. 342 p. (MIRA 11:10)

1. Russia (1917- R.S.F.S.R.) TSentral'noye statisticheskoye
upravleniye.

(Commercial statistics)

WISLAK, M. S.

"Observations on Children Recovered From Tuberculous Meningitis and Treated With Streptomycin." Cand Med Sci, Second Moscow State Medical Inst imeni I. V. Stalin, 22 Feb 54. Dissertation (Vechernyaya Moskva Moscow, 12 Feb 54)

SO: SUN 166, 19 Aug 1954

KISLYAK, N.S.

KISLYAK, N.S., kand.med.nauk

Seventh All-Union Congress of Pediatricians, Pediatrics 35 no.12:

77-82 D '57.

(MIRA 11:2)

(PEDIATRICS)

KISLYAK, N.S., AFANS'YEV, V.M.

Clinical diagnosis of periarteritis nodosa in children. Vop.okh.
mat.1 det. 3 no.3:84-96 J1-Ag '58 (MIRA 11:8)

1. Iz kafedry fakul'tetskoy pediatrii (zav. - prof. P.A. Ponomareva)
II-go Moskovskogo meditsinskogo instituta imeni N.I. Pirogova i
prosektury Detskoy gorodskoy klinicheskoy bol'nitsy No.1 (nauchnyy
rukovoditel' - deyствitel'nyy chlen AMN SSSR M.A. Skvortso, glavnyy
vrach - znalyzhenyy vrach RSFSR Ye.V. Prokhorovich).
(ARTERIES--DISEASES)

KISLYAK, N.S.

Glycogenosis in a four-year-old child. *Pediatrics* 36 no.11:56-58
N '58. (MIRA 12:8)

1. Iz kafedry fakul'tetskoy pediatrii (zav. - prof. P.A. Ponomareva)
II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova i Detskoy
gorodskoy klinicheskoy bol'nitsy No.1 (glavnyy vrach - Ye. V. Prok-
horovich).
(GLYCOGENOSIS)

KISLYAK, N.S.

Sarcoma and leukosis in children of the same family. Probl. gemat. i
perel. krovi 4 no. 9:49-50 S '59. (MIRA 13:1)

1. Iz kafedry fakul'tetskoy pediatrii (zaveduyushchiy - prof. P.A.
Ponomareva) II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova).
(LEUKEMIA)
(KIDNEYS neopl.)
(SARCOMA)

KISLYAK, N.S.; POZNYAK, I.S.

Syrup of aloe with iron in the treatment of hypochromic anemia
in infants. *Pediatrics* no.7:41-43 '61. (MIRA 14:9)

1. Iz kafedry fakul'tetskoy pediatrii (zav. - prof. P.A. Ponomareva)
II Moskovskogo meditsinskogo instituta imeni N.I. Pirogova (dir. -
dotsent M.G. Sirotkina).
(ANEMIA) (ALOE) (IRON--THERAPEUTIC USE)

D'YACHKOVA, A.Ya.; KISLYAK, N.S.

Metabolism of aromatic amino acids in children with acute leucosis.
Vop. med. khim. 8 no.2:144-149 Mr-Apr '62. (MIRA 15:4)

1. Biochemical Laboratory, Institute of Pediatrics, Ministry of
Public Health of the R.S.F.S.R. and Chair of Pediatrics, N.I. Pirogov
Second State Medical School, Moscow.
(LEUCOSIS) (AMINO ACID METABOLISM) (CHILDREN--DISEASES)

KISLYAK, N.S., dotsent (Moskva)

Eighth All-Union Congress of Pediatricians. *Pediatrifa* 41
no.9:88-94 S '62. (MIRA 15:12)
(PEDIATRICS--CONGRESSES)

KISLYAK, N.S.; MAKHONOVA, L.A. (Moskva)

Treatment of children with acute leukemia according to
current trends. *Pediatrics* 41 no.10:80-85 0 '62.
(MIRA 17:2)

KISLYAK, N.S.; YURKOV, Yu.A.

Annotations and authors' abstracts. *Pediatrics* 41 no.11:88
N°62 (MIRA 17:4)

1. Iz II Moskovskogo meditsinskogo instituta imeni Pirogova
(rektor- dotsent M.G. Sirotkina).

KUZNETSOV, V.V.; KISLYAK, V.V.

Study of the propagation of a television signal in mountainous
areas. *Flektrosviaz'* 19 no.6:78-80 Je '65.

(MIRA 18:6)

KISLYAKOV, A., mayor

Through mountain streams and canyons. Voen.vest. 42 no.9:56-
60 S '62. (MIRA 15:8)
(Mountain warfare) (Attack and defense (Military science))

BEZNOSHCHENKO, M., general-major tankovykh voysk; KISLYAKOV, A., mayor

Antitank guided missiles are an important target for tanks. Voen.
vest. 43 no.6:104-106 Je '63. (MIRA 16:6)
(Antitank guns) (Tank warfare)

KISLYAKOV, A., podpolkovnik

Defense of a tank battalion. Voen. vest. 43 no.12:11-14 D '63.
(MIRA 17:2)

STOROZHEV, N., kand. tekhn. nauk; ZHUKOV, V.; KISLYAKOV, A.

The UDR-20 universal double-lock automatic coupling mechanism.
Rech. transp. 24 no.7:30-31 '65. (MIRA 18:8)

1. Vedushchiy konstruktor NPKB (for Zhukov). 2. Glavnyy inzh.
Moryakovskoy remontno-ekspluatatsionnoy bazy (for Kislyakov).

KISLYAKOV, A. D.

"The Observations of Venus Microwave Radiation Carried out
on the Radio-telescope of the P. N. Lebedev Physical Inst.

Paper presented at the 11th International Astrophysical
Symposium, Liege, 9-11 July 1962

Astronomical Council of the Academy of Sciences, USSR

06492

SOV/141-58-4-8/26

AUTHOR: Kislyakov, A.G.

TITLE: The Sensitivity of a Correlation Type Measuring Equipment (O chuvstvitel'nosti korrelyatsionnogo izmeritelya)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1958, v. Nr 4, pp 81-89 (USSR)

ABSTRACT: A correlation null-type measuring equipment is considered. The equipment is illustrated diagrammatically in Figure 1 (Ref 5). The equipment comprises two amplifiers, a multiplier, an RC filter and an indicating device. The measured signal $e_u(t)$ is applied to the first amplifier (see Fig 1). A calibrated signal $e_k(t)$ is applied in anti-phase to the second amplifier. The signals V_1 and V_2 at the output of the amplifiers are applied to the multiplier whose characteristic is:

$$U(t) = qV_1(t)V_2(t) \quad (1)$$

where q is a constant. The output voltage U of the multiplier is applied to the low-frequency filter which

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The Sensitivity of a Correlation Type Measuring Equipment

is terminated with the indicating device. The voltages at the input of the first and the second amplifiers can be expressed by Eq (2) where e_1 and e_2 are the noise voltages produced by the input circuits of the amplifiers; e_1' and e_2' are the noise voltages generated by the internal resistance r of the calibration signal source; e_f is the noise associated with the measured signal, the coefficients α , β , γ and δ are defined by Eq (3) where R is the input resistance of the amplifiers, while r_u is the internal resistance of the source of the measured signal. If the bandwidth of the amplifiers Δf is comparatively narrow, the noise voltages obey Eq (4) where w represents the spectral density of the noise voltages. If the random variation of the amplifier gain is taken into account, the output voltages of the amplifiers can be written in the form of Eq (6) where m_1 and m_2 represent stationary random functions describing the temporal variation of the gain of the amplifiers. On the basis of the above

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equations, the average voltage at the output of the multiplier is expressed by Eq (7). This is equal to zero, when the condition expressed by Eq (8) is fulfilled. One of the principal errors in the measurement of the signal $e_u(t)$ is due to the deviation of the detector characteristic (which forms a part of the multiplier circuit) from the required square law. In particular, when the static characteristic of the detector can be expressed by Eq (10), the average output of the multiplier is given by Eq (11). From this expression it follows that the relative error of measurement is given by Eq (12). This error is encountered when a non-null method of measurement is used and can be entirely eliminated, if the measurement is done by employing two different values of the calibration signal. The noise voltage at the output of the multiplier is given by Eq (13) and its correlation function is expressed by Eq (14). The correlation function at the output of the RC filter is expressed by Eq (16) where $\tau_0 \approx R_0 C$. The signal-to-noise

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ratio at the output of the filter is expressed by Eq (17), where Q is defined by Eq (18). From the above analysis it is seen that a correlation-type measuring equipment is analogous to a modulation-type receiver, since in both cases the application of the null method of measurement permits the reduction of the influence of noise on the results of the measurement. The errors of measurement, due to the deviation of the detector characteristics from the required square law, are significant only if a non-null method is used and even then they are comparatively small. The author expresses his gratitude to V.S.Troitskiy and A.N.Malakhov for their interest in this work and also to I.L.Bershteyn for a number of valuable remarks. There are 2 figures,

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The Sensitivity of a Correlation Type Measuring Equipment

1 appendix and 11 references, 8 of which are Soviet
and 3 English.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri
Gor'kovskom universitete (Radiophysics Research
Institute of the Gor'kiy University)

SUBMITTED: 1st April 1958

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05481

SOV/141-2-2-6/22

AUTHOR: Kislyakov, A.G.

TITLE: The Sensitivity of Power Meters for Weak Signals With Continuous Spectra

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 2, pp 187 - 197 (USSR)

ABSTRACT: It has been appreciated for a long time that the sensitivity of, for example, a galvanometer depends on the time occupied in making a reading. Expressions are obtained here for the minimum detectable signal as a function of observation time for modulated, compensated and correlation methods of measurement. The presence of a weak signal is revealed by noting the output of the measuring device when the signal is switched successively in and out. The process is hampered by the noise accompanying the signal and by fluctuations in the parameters of the measuring circuit. The minimum detectable signal is given by Eq (3) for the case of a single reading. When the reading occupies a finite time the expression is Eq (6), where the dispersion over a time T is given by Eq (7). This latter equation is given in Eq (8)

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The Sensitivity of Power Meters for Weak Signals With Continuous Spectra

as the sum of the separate contributions from each source of fluctuation. If the frequency characteristic of the RC integrating circuit in the meter is Eq (4), where $\tau_0 = RC$, then using $x = T/\tau_0$ the minimum detectable signal (m.d.s.) as a function of x is Eq (15). The spectral densities of the fluctuations in noise and gain are Eq (5), where the correlation time, τ_m , may be of the order of 10^5 sec and more. The parameter $\theta = \tau_0/\tau_m$ is adopted. When $x \ll 1$, the m.d.s. falls off as x increases and when $x \gg 1$ - it increases with x . When $x \gg 1$ but $\theta \ll 1$ (i.e. parameter fluctuations are not smoothed out) the m.d.s. is Eq (16). In this instance, the sensitivity falls as T increases. In Refs 3, 4 and 5 (V.S. Troitskiy et al), formulae have been obtained for the m.d.s. in compensated, modulated and correlated meters. These are, respectively, Eqs (17), (18) and (19) in the notation of Ref 5. In these expressions, w_n , w_ϕ and w_c are the spectral densities of meter noise (referred to the

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input), background noise and signal, respectively. The transfer coefficient of the input circuit is α . It is assumed $\eta^2 \ll 1$, $\xi^2 \ll 1$ where $\eta = w_{\phi} / (w_{\phi} + w_n)$,

$\xi = \alpha w_{\phi} / (w_{\phi} + w_n)$. The compensated and correlated meters only are analyzed in detail since the sensitivity of the modulated circuit depends on network parameters in the same fashion as the correlator. Figure 1 shows how the sensitivity of a compensated meter varies with reading time and the corresponding graph for a correlator is Figure 3. In Figure 2, the optimum sensitivities of each circuit are compared. The variation of sensitivity with time constant for various reading times is Figure 4. At first sight the process of averaging a record of measurement might not appear to be more useful than a single reading but when the concrete example is taken of comparing records taken over

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Successive intervals of time an advantage is clear. The m.d.s. is Eq (26) and its variation with reading time is Figure 5. The m.d.s. has a maximum in the neighbourhood of the correlation time of the parameter fluctuations, while the sensitivity also goes through a maximum and the optimum value of T is Eq (28) (for a correlator). Where T and τ_0 can be chosen freely the best results will be obtained - for example, in the measurement of aerial polar diagrams when using weak sources. V.S. Troitskiy is thanked for advice. There are 5 figures and 11 references, of which 6 are Soviet and 5 English.

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Radiophysics Research Institute, Borking Univ.

67545

16.6100

AUTHOR: Kislyakov, A.G.

SOV/141-2-3-24/26

TITLE: Determination of the Spread of a Segment of a Stationary Random Function on the Basis of its Spectrum

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1959, Vol 2, Nr 3, pp 509 - 510 (USSR)

ABSTRACT: The spread of an arbitrary random quantity $u(t)$ relative to its mean value, taken over a time T , is described by the quantity:

$$D_T = \overline{[u(t) - \bar{u}(t)]^2} \quad (1)$$

which can be referred to as the spread over the interval T . This quantity can also be written as :

$$D_T = \overline{u^2(t)} - \overline{[u(t)]^2} = \int_0^\infty w(f) df - \int_0^\infty (w(fT))^{-2} \sin^2(\pi fT) w(f) df$$

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SOV/141-2-3-24/26

Determination of the Spread of a Segment of a Stationary Random Function on the Basis of its Spectrum

where $w(f)$ is the spectral density of the average square of $u(t)$. An effective spectrum $w_T(f)$ such that:

$$D_T = \int_0^{\infty} w_T(f) df \text{ is introduced.}$$

Consequently, $w_T(f)$ can be written as Eq (2), where

$$w_0(f) \text{ is a function for which: } \int_0^{\infty} w_0(f) df = 0.$$

From Eq (2), it is seen that the spectrum $w_T(f)$ can be used to determine the spread of the function $u(t)$ over the time T . The multiplier

$g(T, f) = 1 - (\pi f T)^{-2} \sin^2(\pi f T)$ in Eq (2) represents a weighting function which, in practice, can be regarded as

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being equal to unity for frequencies greater than $1/T$ and
equal to zero for frequencies lower than $1/T$.
The author expresses his gratitude to V.S. Troitskiy and
A.N. Malakhov for valuable advice and constructive
criticism. There are 1 figure and 3 Soviet references.

ASSOCIATION: Issledovatel'skiy radiofizicheskiy institut pri
Gor'kovskom universitete (Radiophysics Research Institute
of Gor'kiy University)

SUBMITTED: March 26, 1959

4

Card 3/3

KISLYAKOV, A. G.

Concerning the Moon's Radiation in the 4-mm Wave Range.

report presented at the International Symposium on the moon, held at the Pulkovo Observatory, Leningrad, USSR, 6-8 Dec 1960.

KISLYAKOV, A. G. (USSR)

"Radio emission of the Moon in the diapason"

report presented at the Intl. Astronomical Union's Symposium on the Moon,
Leningrad, 6 Dec 60.

(KISLYAKOV, A.G.)

Relation between hydrological conditions and fluctuations
in the abundance of different year classes of codfish.
Trudy sov. Ikht. kom. no.13:260-264 '61. (MIRA 14:8)

1. Polyarnyy nauchno-issledovatel'skiy institut rybnogo
khozyaystva i okeanografii - PINRO.
(Codfish)

3,1710

30754
S/141/61/004/003/005/020
E133/E435

AUTHOR: Kislyakov, A.G.

TITLE: Lunar and solar radio emission in the 4 mm band

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,
1961, Vol.4, No.3, pp.433-443

TEXT: This is an extended version of the paper read on the
session of the full assembly of the Komissia po radicastronomii
(Commission for Radioastronomy) on November 25, 1960.

Measurements of the Moon in the wavelength range 75 to 0.8 cm have been interpreted by J.G.Jaeger (Ref.3: Austr. J. Phys., v.6, 10 (1953)) as indicating that the lunar surface consists of a dust layer superimposed on a solid layer below. The observations on change in radio brightness of the Moon with phase can also be interpreted by means of a homogeneous model of the lunar surface. In order to distinguish between the possible models, it is important to extend the measures to shorter wavelengths. A few measurements of the Moon at $\lambda = 4.3$ mm have been described by R.J.Coates (Ref.9: Paper for presentation at the AAS meeting at Toronto, Canada, Sept. 1, 1959) and at $\lambda = 2$ to 4 mm by the author
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Lunar and solar radio emission ...

of this paper (Astron. zhurnal, being published). Observations of the Sun have also been made at 4.3 mm. An effective temperature of $7000^{\circ}\text{K} \pm 10\%$ was found by R.J.Coates (Ref.11; Proc. IRE, v.46, 122 (1958)) and a temperature of 10^4 to $1.2 \times 10^4^{\circ}\text{K}$ was derived by A.W.Straiton and his team (Ref.13; J.Appl. Phys., v.29, 776 (1958)). Calibration of the apparatus was carried out in the normal way by pointing the antenna first at the source, then at the sky near the source and then to a "black body" (in this case, a hillside). A correction was made for the temperature gradient in the atmosphere. The author points out that, if atmospheric absorption is large, the assumption of an isothermal atmosphere can lead to large errors in the value derived for the temperature (as much as 20%). Since the present series of observations were carried out high in the Elbruz mountains, the correction was small. It was found that the measured antenna temperature did not depend on the altitude of the source above the horizon. The observations were made during three lunar cycles (June - August) and the lunar temperature was found to depend on phase as:

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Lunar and solar radio emission ...

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$$T_{\eta} = [230 + 73 \cos (\Omega t - 24^{\circ})] ^{\circ}K \quad (10)$$

The scatter of points was not more than $\pm 3\%$. The error in the absolute value of the temperature does not exceed 10% in all probability. The mean temperature derived for the Sun was $8000 \pm 700^{\circ}K$. This agrees, within the limits of error, with the value quoted above from a paper by R.J.Coates (Ref.11). The values obtained by Coates (Ref.9) for three lunar phase angles agree well with curve found in the present paper. The lunar temperature variation was not found to have second or third harmonic terms with an amplitude greater than 10%. This is in agreement with the single-layer (homogeneous) model of the lunar surface suggested in the paper of V.S.Troitskiy (Ref.21: Astron. zh., v.31, 511 (1954)) and also with the data at 8.2 mm obtained by A.Ye.Salomonovich (Ref.6: Astron. zh., v.35, 129 (1958)) and at 1.25 cm obtained by I.H.Piddington, H.C.Minnett (Ref.5: Austr. J. Sci. Res., 2A, 63 (1949)), but it contradicts results obtained at 8.6 mm by J.E.Gibson (Ref.7: Proc. IRE, v.46, 280 (1958)). If δ is the ratio of the damping coefficients for Card 3/5

Lunar and solar radio emission ...

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thermal and electromagnetic waves in the lunar surface layers,
then the author finds that

$$\delta/\lambda = 2.2 \pm 0.3 (\lambda = 4 \text{ mm}).$$

This is in good agreement with the value found by V.S.Troitskiy,
K.M.Strezhneva, (Izv. vyssh. uch. zav. Radiofizika):

$$\delta/\lambda = 2.2 \pm 0.4 (\lambda = 3.2 \text{ cm}).$$

There are two appendices. The first describes how the average
atmospheric temperature was derived for use in the calculations.
The second discusses the influence on the results of anisotropic
scattering at the antenna. Acknowledgments are expressed to
V.S.Troitskiy for directing the work, N.M.Tseytlin and
V.A.Razin for their comments, M.R.Zelinskaya and V.A.Porfir'yev
for reducing the experimental data. There are 3 figures and
25 references: 14 Soviet-bloc and 11 non-Soviet-bloc. The most
recent references to English language publications read as follows:
Ref.9: as quoted in text;

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Ref.11: as quoted in text;

Ref.12: R.J.Coates, Astrophys. J., v.128, 83 (1958);

Ref.13: A.W.Straiton, C.W.Tolbert, C.O.Britt, J. Appl. Phys., v.29, 776 (1958).

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut
pri Gor'kovskom universitete (Scientific Research
Institute for Radiophysics at Gor'kiy State University)

SUBMITTED: December 29, 1960

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3,1720 (1126, 1127, 1129)

04/01/004/003/019/020
01/1/1961

AUTHORS: Kislyakov, A.G., Kuz'min, A.D., Salomonovich, A.Ye.

TITLE: Radio emission from Venus in the 4 mm band

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,
1961, Vol.4, No.3, pp.372-374

TEXT: Observations of Venus were made in March 1961, using the 22 m radio telescope of the Fizicheskii Institut imeni P.N.Lebedev AN SSSR (Physics Institute imeni P.N.Lebedev AS USSR) in the 4 mm band. The method which was employed has been described previously (Ref.2: A.D.Kuz'min, A.Ye.Salomonovich, Astron. zh., v.37, 297 (1960)). Guiding on the planet was by optical observation with slow trailing in azimuth. The antenna temperature was determined by two methods. The first was by inserting an absorbing wedge, at air temperature, in the signal path. The error in the resulting value for the temperature was within $\pm 7\%$. The second method was by comparison of the signal with the atmospheric radiation. (The atmospheric absorption values for 4 mm waves are well known.) This second method was used as a check on the first. The major error in reducing the

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Radio emission from Venus ...

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observations probably lies in the calculation of the average temperature over the whole of the planetary disc. In this connection, the halfwidth of the main beam was investigated and found to be $1'.6$. The amount of scattering at the antenna was investigated by observing the Sun and Moon. The brightness temperature of Venus, averaged over the whole disc, was then found to be $390^{\circ}\text{K} \pm 120^{\circ}\text{K}$. There are 2 references: 3 Soviet-bloc and 1 non-Soviet-bloc. The reference to an English language publication reads as follows:

Ref.3: A.W.Straiton, C.W.Tolbert, Proc. IRE, 48, 898 (1960).

ASSOCIATIONS: Fizicheskii institut im. P.N.Lebedeva AN SSSR
(Physics Institute imen. P.N.Lebedev AS USSR)
Nauchno-issledovatel'skii radiofizicheskii institut
pri Gor'kovskom universitete (Scientific Research
Institute for Radiophysics at Gor'kiy University)

SUBMITTED: May 9, 1961

Card 2/2

30686

S/141/61/004/004/020/024
E032/E414

3,1720

AUTHOR: Kislyakov, A.G.TITLE: Preliminary results of an experimental study of
solar radio emission in the wavelength range 3 - 7 mmPERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,
v.4, no.4, 1961, 760-762

TEXT: The radio emission was investigated with the aid of a wide-band modulation radiometer. The radiation received by the antenna was analysed by means of waveguide filters inserted between the antenna and the radiometer input. The radiometer was calibrated using the thermal emission of an absorbing wedge in a waveguide. It was found that the effective temperature of the solar disc T_c in the above wavelength range lies between approximately 6000 and 9000°K. The method of reduction of the observations is described and it is stated that the observations will be continued after the apparatus and the method have been modified in order to increase the accuracy. There are 3 figures and 7 references: 2 Soviet-bloc and 5 non-Soviet-bloc. The four most recent references to English language publications read as

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+

30686

Preliminary results ...

S/141/61/004/004/020/024
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follows: Ref.1: A.W.Straiton, C.W.Tolbert, Proc. IRE, 48, 898
(1960); Ref.3: E.Weger, J. Meteorology, 2, 159 (1960);
Ref.4: R.J.Coates, Proc. IRE, 46, 122 (1958);
Ref.6: R.N.Whitehurst, J. Copeland, F.H.Mitchell, J. Appl. Phys.,
28, 295 (1957).

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut
pri Gor'kovskom universitete (Scientific Research
Radiophysical Institute of the Gor'kiy University)

SUBMITTED: March 3, 1961

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KISLYAKOV, A.G.

Results of the experimental investigation of the moon's radio emission
in the four millimeter radio wave range. Astron.zhur. 38 no.3:561-
563 My-Je '61. (MIRA 14:6)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'-
kovskom gosudarstvennom universitete.
(Moon) (Radio astronomy)

KISELYANOV, N. G.

POBROV, M. S., Astronomical Council, Academy of Sciences USSR [1960] - "Optics and Geometry in the matter of Saturn's rings"

PROKOP'YEV, Vladimir K., Crimean Astrophysical Laboratory imeni G. A. Steyn [1962] - "On the presence of oxygen in the atmosphere of Venus"

SALOMONOVICH, A. Ye., Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR, and Physics Institute imeni P. N. Lebedev, Academy of Sciences USSR - "Observations of the radioemission of Venus and Jupiter on the wave of 8 mm."

SALOMONOVICH, A. Ye., KIZ'MIN, Arkadiy D., and KISELYANOV, A. G. - "Radioemission of Venus on the wave of 4 mm."

SALOMONOVICH, A. Ye., KIZ'MIN, Arkadiy D., RYKOVA, V. P., and SHAYLOVSKIY, I. V. - "Observations of the radioemission of Venus and Jupiter on the wave of 3.3 cm."

SALOMONOVICH, A. Ye., and KIZ'MIN, A. D. - "Radioemission of Venus on the wave of 9.6 cm."

SALOMONOVICH, A. Ye., and KIZ'MIN, A. D. - "Results of the observations of radioemission of Venus in 1961"

SHARONOV, Vasvold V., Director, Astronomical Observatory, Leningrad State University [1961 position] - "Probable state of the surface and atmosphere of the planet Mars according to photometric and colorimetric data"

VSEKHEVAYSKIY, Sergey K., Head of the Chair of Astronomy, Kiev State University [1961 position] - "Nature of Saturn's rings and signs of the existence of a ring around Jupiter"

YEZERSKIY, V. I., and PARABASHEV, N. P., Director, Kharkov Astronomical Observatory, Kharkov State University [1960 position] - "Optical properties of the atmosphere and surface of Mars according to photometric and spectrophotometric observations carried out at the Kharkov University Observatory"

Report to be submitted for the 11th Intl. Astrophysics Symposium, Belgian Inst. of Astrophysics, Conto-Scoasin, Belgium, 9-11 Jul 1962.

KISLYAKOV, A. G.

Optimum observation time in measuring weak signals. Izv. vys.
ucheb. zav.; radiofiz. 5 no.5:945-955 '62. (MIRA 15:10)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri
Gor'kovskom universitete.

(Radio measurements)

KISLYAKOV, A.G.

Letter to the editor. Izv.vys.ucheb.zav.; radiofiz. 5 no.6:1247-
1248 '62. (Radio) (Information theory) (MIRA 16:2)

38479

S/033/62/039/003/001/010

EO32/E114

3,1720

AUTHORS: Kislyakov, A.G., Kuz'min, A.D., and Salomonovich, A.Ye.

TITLE: The radio emission of Venus at 4 mm wavelength

PERIODICAL: Astronomicheskii zhurnal, v.39, no.3, 1962, 410-417

TEXT: The intrinsic radio emission of Venus is expected to yield important information on the temperature of the planet, on the nature of its surface, on the composition of its atmosphere and on some of its rotational properties. All previous measurements are said to have been carried out at wavelengths greater than 0.8 cm. In March - May, 1961, the 22-metre radio telescope of the Fizicheskii institut imeni P.N. Lebedeva AN SSSR (Physics Institute imeni P.N. Lebedev, AS USSR) was used to observe the radio emission of Venus at 4 mm. An account of the method of reduction of the observations is given and it is estimated that the RMS error in the measured intensity was $\pm 30\%$. The results obtained are shown in Figs. 4 and 5. (Fig.4: Antenna temperature as a function of time; the arrow indicates inferior conjunction. Fig.5: Brightness temperature of Venus as a function of time).

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The radio emission of Venus at ... S/033/62/039/003/001/010
E032/E114

At the inferior conjunction the relative area of the illuminated disc was 0.007, whereas at the end of the observations it was 0.34. Since the antenna parameters were not known with sufficient accuracy, the only conclusion that may be drawn as regards phase dependence of the temperature is that the temperature difference for these two days did not exceed 230 °K. There are 6 figures. X

ASSOCIATION: Fizicheskiy in-t im. P.N. Lebedeva Akademii nauk SSSR
(Physics Institute imeni P.N. Lebedev, AS USSR).

Radiofizicheskiy in-t Gor'kovskogo gos. universiteta
im. N.I. Lobachevskogo (Radiophysics Institute of
the Gor'kiy State University imeni N.I. Lobachevskiy)

SUBMITTED: November 29, 1961

Card 2/2

KISLYAKOV, A.G.; LOSOVSKIY, B.Ya.; SALOMONOVICH, A.Ye.

Radio emission of lunar "seas" and "continents" in the millimeter band. Izv. vys. ucheb. zav.; radiofiz. 6 no.1:192-193 '63. (MIRA 16:7)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR.
(Moon--Observations) (Radio astronomy)

13600-63
e-4 PT-2/GW

ENT(1)/FBD/FCC(w)/BDS/REC-2/ES(v) AFFTC/ESD-3 P1-4/Po-4/

ACCESSION NR: AP3004828

8/0141/63/006/003/0431/0436

AUTHOR: Kislyakov, A. G.; Salomonovich, A. Ye.

83
76

TITLE: Radio emission of the equatorial region of the Moon in the 4-mm band

SOURCE: IVUZ. Radiofizika, v. 6, no. 3, 1963, 431-436

TOPIC TAGS: lunar observation, lunar brightness temperature, brightness temperature

ABSTRACT: The 22-m high-resolution radio telescope of the Physics Institute imeni P. N. Lebedev, AN SSSR, was used for observations of lunar radio emission in the 4-mm wavelength range from March to June 1961. The purpose of the observations was to compare variations in brightness temperature in the various sectors of lunar surface during lunation. To this end, principal attention was paid to the investigation of a narrow belt along the lunar equator corresponding to the width of the major lobe of the antenna radiation pattern, which was approximately 1.6' at 3-db points. This method made it possible to obtain numerous records of brightness temperature and then to utilize the method of graphic averaging for determining the amplitude and phase-constant component of the first, second, and third variable-component harmonics at the center of the Moon and at equatorial

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L 13600-63

ACCESSION NR: AP3004828

points at longitudes $\pm 32^\circ$ and -47° . The nature of the variation in the amplitude of harmonics with the increase in their number made it possible to ascertain the correctness of the longitudinal distribution of lunar surface temperature in accordance with the $\sqrt{\cos \psi}$ law. Fig. 1 of the Enclosure shows the graphic distribution of brightness temperatures along the equator; Fig. 2 is a plot of the radio emission temperatures of various sectors of the equator. "The authors thank N. V. Serov, B. Ya. Losovakiy, V. S. Lazarevakiy, M. R. Zelinakaya, A. N. Ivannikova, and T. T. L'vova for their aid in the project." Orig. art. has: 3 figures, 2 tables, and 1 formula.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR); Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Institute of Radiophysics at Gor'ky University)

SUBMITTED: 29Aug62

DATE ACQ: 27Aug63

ENCL: 02

SUB CODE: AS, GE

NO REF SOV: 015

OTHER: 001

Card 2/4₂

KAPLAN, S.A.; ZAYTSEV, V.V.; KISLYAKOV, A.G.; KOBRIN, M.M.; TSEYTLIN, N.M.

Fourth All-Union Conference on Radio Astronomy. Izv. vys. ucheb.
zav.; radiofiz. 6 no.4:861-869 '63. (MIRA 16:12)

KISLYAKOV, A.G.; SALOMONOVICH, A.Ye.

Radio emission of solar active regions in the millimeter wave range. Astron.zhur. 40 no.2:229-234 Mr-Apr '63. (MIRA 16:3)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR i Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.
(Sun) (Radio astronomy)

ACCESSION NR: AP4024466

S/0141/64/007/001/0046/0050

AUTHOR: Kislyakov, A. G.; Plechkov, V. M.

TITLE: Precision measurements of the radio emission from the moon and from the sun in the 4-mm band

SOURCE: IVUZ. Radiofizika, v. 7, no. 1, 1964, 46-50

TOPIC TAGS: radioastronomy, radio emission, solar radio emission, lunar radio emission, radio emission precision measurement, artificial moon method, dummy moon method, lunar brightness temperature, lunar average brightness temperature, lunar integral brightness temperature, lunar central brightness temperature, solar brightness temperature

ABSTRACT: Owing to the low accuracy of 1960-1961 radio emission measurements (10-15% error), they were repeated in August-September 1962 on Pamir (3860 m above sea level), using the more precise dummy-moon procedure developed at the Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radio-physics Institute at Gor'kiy University) (V. D. Krotikov, V. A. Porfir'yev, and V. S. Troitskiy, Izv. vyssh. uch. zav. —Radiofizika Cord 1/43

ACCESSION NR: AP4024466

v. 4, 1004, 1961). At 4 mm the sun's brightness temperature is $(7300 \pm 200)K$, and the moon's radio emission has a phase variation $T_e = [204 + 56 \cos(\phi - 23)]K$, (T_e - brightness temperature of moon averaged over disc, ϕ - moon's phase reckoned from full moon). The accuracy of T_e is not worse than 4 per cent, of which 2.5 per cent is due to the fluctuating component. Discrepancies between the experimental points and the foregoing expression are attributed to higher harmonics, which are appreciable at 4 mm but which cannot be accurately determined as yet. Some tentative conclusions are drawn with regards to the dielectric constant and density of the moon's surface, the moon's emissivity, and the phase variation of brightness of the center of the moon's disk, for which an expression $T(\phi) = [221 \pm 74 \cos(\phi - 27)]K$ is obtained. The latter also yields a corrected value $(370 \pm 90)K$ for the brightness temperature of Venus. 'The authors are grateful to V. S. Troitskiy for guidance; to V. D. Krotikov for participating in a discussion of some of the topics; to N. V. Serov, V. N. Sogonov, V. N. Malafeyev, who performed the bulk of the observations, and to V. A. Porfir'yev, who rendered great help in the data reduction.' Orig. art. has: 2 figures and 6 formulas.

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ACCESSION NR: AP4024466

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri
Gor'kovskom universitete (Scientific Research Radiophysics Institute
at Gor'kiy University).

SUBMITTED: 26Apr63

DATE ACQ: 15Apr64

ENCL: 01

SUB CODE: AS

NO REF SOV: 011

OTHER: 000

Card 3/4

L 54P17-65 FBD/EWT(1)/ENG(v)/EEC(t)/EEC-4 Po-4/Pe-5/Pae-2/P1-4 GW/WS-4

ACCESSION NR: AP5014498

UR/0141/65/008/002/0219/0228

AUTHOR: Kamenskaya, S. A.; Kislyakov, A. G.; Krotikov, V. D.; Naumov, A. I.; Nikonov, V. N.; Porfir'yev, V. A.; Pleshkov, V. M.; Strezhneva, K. M.; Troitskiy, V. B.; Fedoseyev, L. I.; Lubyako, L. V.; Sorokina, E. P.

TITLE: Observation of the radio eclipse of the moon at millimeter wavelengths

SOURCE: IVUZ. Radiofizika, v. 8, no. 2, 1965, 219-228

TOPIC TAGS: radioastronomy, lunar eclipse, brightness temperature, lunar surface material

ABSTRACT: The radio emission from the moon was measured during the eclipses of 7 July and 30 December 1963, by a procedure in which the antenna was periodically compared with a standard signal which consisted of the difference between the emission of a section of the sky of fixed altitude and a mountain slope having a temperature close to that of the surrounding air. The work was done at Mt. Aragats in Armenia (3250 m) on 7 July and in Usuruy (Prikmorskiy kray) on 30 December. Several refinements were introduced to correct for the variation of the height of the moon during the time of the eclipse. The maximum relative drop of effective temperature was $\sim 17\%$, $\sim 8\%$, $8 \pm 2\%$, $5 \pm 2\%$, and $3 \pm 2\%$ at wave-

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L-54817-65

ACCESSION NR: AP5014498

2

lengths 1.2, 2.1, 4.0, 7.5, and 16 mm in the eclipse of 7 July and $22.5 \pm 2.7\%$, $12 \pm 2\%$, and $8 \pm 2\%$ at wavelengths 1.2, 4.0, and 6.0 mm in the eclipse of 30 December. The best agreement between the observation data and the theoretically predicted course of the radio brightness temperature during the eclipse, for a homogeneous model of the moon, is obtained if $r/b = (6 \pm 1.5 \text{ and } 1.0) \times 10^4$. $r = (\kappa \rho c)^{-1/2}$ (κ --thermal conductivity, ρ --density, c --specific heat, b --tangent of dielectric loss angle of the lunar material). This value of r/b agrees with previously obtained value measured by a different method. "We thank the Director of the Institute of Physics, Armenian Academy of Sciences, A. I. Alikhanyan for the opportunity of performing the work on the high-mountain base of the Institute and for help." Orig. art. has: 2 figures and 1 table.

[02]

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Scientific Research Institute at the Gor'kiy University)

SUBMITTED: 00

ENCL: 00

SUB CODE: AA, EC

NO REF SOV: 006

OTHER: 004

ATD PRESS: 4029

Card 2/2

ACC NR: AP6022070

SOURCE CODE: UR/0141/66/009/003/0451/0461

AUTHOR: Kislyakov, A. G.

ORG: Scientific-Research Institute of Radiophysics, Gor'kiy University (Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete)

TITLE: Effective path length and mean temperature of the atmosphere

SOURCE: IVUZ. Radiofizika, v. 9, no. 3, 1966, 451-461

TOPIC TAGS: radio wave absorption, radio emission, atmospheric temperature

ABSTRACT: The effective path length of an extraterrestrial radio emission passing the Earth's atmosphere and the mean atmosphere temperature are calculated. Findings: (1) The effective water-vapor path length slightly depends on the temperature and altitude at $h \leq 8$ km; the altitude dependence is nearly exponential, and in most cases the effective altitude of vapor is 1.5 km (for a plain); the vapor distribution may widely differ from its mean value; (2) The

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UDC: 621.371.166.24

ACC NR: AP6022070

effective oxygen path length substantially depends on the atmosphere temperature and altitude; the total vertical absorption of oxygen decreases with the altitude faster than the oxygen absorption factor; (3) The mean atmosphere temperature substantially depends on the absorption in the direct beam; the difference $T_0 - \bar{T}$ depends on the value of \bar{T} (T_0 - sea-level temperature, \bar{T} - mean temperature of the atmosphere). "The author wishes to thank S. A. Zhevakin and A. P. Naumov for their criticisms; V. S. Troitskiy and K. S. Stankevich for their discussions; and G. G. Rogacheva and T. N. Aleshina for carrying out most computations." Orig. art. has: 8 figures, 19 formulas, and 1 table.

SUB CODE: 04 / SUBM DATE: 18May65 / ORIG REF: 013 / OTH REF: 002

Card 2/2

ACC NR: AP7001210

SOURCE CODE: UR/0141/66/009/006/1078/1084

AUTHOR: Dryagin, Yu. A.; Kislyakov, A. G.; Kukin, L. M.; Naumov, A. I.; Fedoseyev, L. I.

ORG: Scientific Research Institute of Radiophysics at Gor'kiy State University (Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete)

TITLE: Measurement of atmospheric radio wave absorption in the 1.36—3.0-mm range

SOURCE: IVUZ. Radiofizika, v. 9, no. 6, 1966, 1078-1084

TOPIC TAGS: millimeter wave, radio wave propagation, radio wave absorption

ABSTRACT: Results of an experimental investigation of atmospheric absorption of radio waves in the 1.36—3.0-mm range are reported. Coefficients of atmospheric absorption were measured using special transmitting and receiving equipment. Detector-type modulated radiometers and parabolic antennas with diameters of 300 mm formed the receiving system. The transmitting system consisted of a parabolic mirror 920 mm in diameter, a plane reflector (diameter, 130 mm), and a backward-wave tube serving as a power generator. Antennas equipped for

Card. 1/2

UDC: 621.371.166

ACC NR: AP7001210

orientation purposes with optical sighting devices were installed on roatry systems of the vertical-azimuth type. Methods of varying humidity and of measuring the distance between transmitting and receiving points were used while determining the absorption coefficient. The absorption coefficients of water vapor (over the entire wave range indicated), and molecular oxygen (near the 2.53-mm line) were measured. It was found that the absorption coefficient of water vapor in the frequencies far from resonance is 1.5—2 times larger than the theoretical value calculated for it by S. A. Zhevakin and A. P. Naumov (Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika, no. 6, 1963, 674). The resonance absorption coefficient ($\lambda = 1.63$ mm) is equal to 26.8 ± 1 db·km⁻¹ as compared to 31.6 db·km⁻¹ given in the same calculation. The great discrepancy between measured and calculated values of the absorption coefficient of water vapor at frequencies far from resonance cannot be explained by an incorrect choice of line half-width. The measured value in air of the line half-width is 0.1025 ± 0.0035 cm⁻¹; the calculated value is 0.087 cm⁻¹. The absorption coefficient of oxygen at the 2.53-mm wavelength closely agrees with the calculated one. For wavelengths other than 2.53 mm the measured absorption coefficient exceeds the calculated one by a factor of 5—10. Orig. art. has: 2 figures and 6 formulas. [WA-3]

SUB CODE: 17,09 SUBM DATE: 26Jan66/ ORIG REF: 007/ OTH REF: 014
 ATD PRESS: 5111
 Card 2/2

S/048/60/024/012/010/011
B019/B056

AUTHORS: Berlovich, E. Ye., Il'in, V. V., Kislyakov, A. I.,
Nikitin, M. K., and Bedike, T.

TITLE: Study of the Probability of Rotational Transitions Between
Rotational Levels of Er^{166}_{2719} and TU^{169}_{719} -Nuclei

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
Vol. 24, No. 12, pp. 1492-1501

TEXT: The present paper was read at the 10th All-Union Conference on
Nuclear Spectroscopy, which was held in Moscow from January 19 to
January 27, 1960. The authors studied the lifetime of the first excited
level (81 kev) of the Er^{166} nucleus and of the 118, 139, and 473 kev
levels of the TU^{169} nucleus. With a double magnetic coincidence spectro-
meter the coincidences $e - e$, $\beta - e$, Auger electron - e and Auger elec-
tron - Auger electron were measured. e denotes the internal conversion
electrons and β the decay electrons. The double magnetic coincidence

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Study of the Probability of Rotational
Transitions Between Rotational Levels of Er^{166} - S/048/60/024/012/010/011
and Tu^{169} -Nuclei - B019/B056

spectrometer is a combination of two magnetic spectrometers with sectors having an improved focusing, in which the magnetic fields may be changed separately. The decay curve of an 81-kev state of the Er^{166} -nucleus shown in Fig. 1 was determined by measuring the coincidences of the K-electrons of the 184-kev transition and the M-electrons of the 81-kev conversion transition. The lifetime of the first excited state (2^+) was found to be $(2.0 \pm 0.2) \cdot 10^{-9}$ sec. On the basis of the transmutation scheme $\text{Yb}^{169} \rightarrow \text{TU}^{169}$, the transitions between the rotational bands of the ground state, the lifetime of the 473-kev level, and the transitions between the levels of the various rotational bands are thoroughly studied. The results of the investigations of lifetime and spin of the individual levels are given in Fig. 3. The characteristics of the transitions between the levels of various rotational bands of TU^{169} are given in a table. M.Ye. Voykhanskiy is mentioned. There are 6 figures, 1 table, and 30 references: 17 Soviet, 10 US, 1 German, and 2 Danish.

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Study of the Probability of Rotational
Transitions Between Rotational Levels of Er^{166} and Tu^{169} -Nuclei

S/Q48/60/024/012/010/011
B019/B056

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk SSSR (Institute
of Physics and Technology of the Academy of Sciences USSR)

Text to this table: 1) Level energies. 2) Half-lives in seconds.
3) Transition energies. 4) Type of transition. 5) Relative intensity of
the γ -lines. 6) α total. 7) Experimental lifetime of γ -radiation, τ_{exp} .
8) τ_{calc} calculated according to Weisskopf. 9) $\frac{\tau_{\text{calc}}}{\tau_{\text{exp}}}$ Weisskopf.

Card 3/6

S/048/60/024/012/010/011
B019/B056

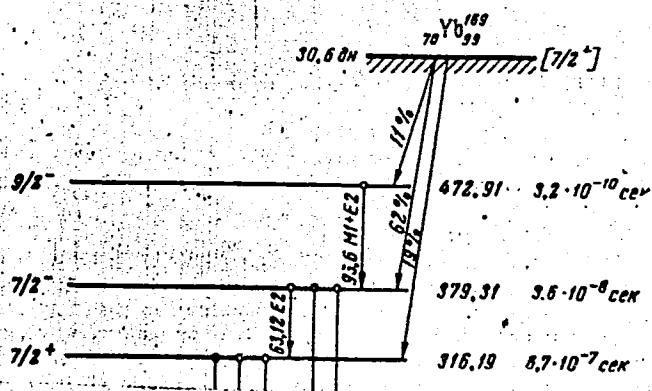
Характеристики переходов между уровнями разных ротационных полос Ti^{149}

1	2	3	4	5	6	7	8	9
Энергия уровня, keV	$T_{1/2}$, эксп, сек	Энергия перехода, keV	Тип пере- хода	Относите- льная ин- тенсив- ность γ-лучей	$a_{\text{поли}}$	$\tau_{\text{эксп}}$, сек	$\tau_{\text{Вайс}}$, сек	$\tau_{\text{Вайс}}/\tau_{\text{эксп}}$
318	$(6,7 \pm 0,2) \cdot 10^{-7}$	177	E2	5,6	0,54	$2,9 \cdot 10^{-5}$	$8,3 \cdot 10^{-8}$	$2,9 \cdot 10^{-3}$
		177	M1	25	0,87	$6,4 \cdot 10^{-6}$	$5,8 \cdot 10^{-12}$	$0,9 \cdot 10^{-6}$
		198	E2	4,6	0,45	$3,5 \cdot 10^{-5}$	$4,8 \cdot 10^{-8}$	$1,4 \cdot 10^{-3}$
		198	M1	46	0,83	$3,5 \cdot 10^{-6}$	$4,1 \cdot 10^{-12}$	$1,2 \cdot 10^{-6}$
		308	E2	18	0,05	$9,0 \cdot 10^{-6}$	$5,2 \cdot 10^{-9}$	$0,58 \cdot 10^{-3}$
379	$(3,6 \pm 0,1) \cdot 10^{-8}$	63	E1	65	0,9	$1,1 \cdot 10^{-7}$	$1,2 \cdot 10^{-12}$	$1,1 \cdot 10^{-5}$
		240	E1	1	0,03	$6,4 \cdot 10^{-8}$	$2,2 \cdot 10^{-14}$	$0,34 \cdot 10^{-6}$
		260	E1	8	0,03	$7,8 \cdot 10^{-7}$	$1,8 \cdot 10^{-14}$	$2,3 \cdot 10^{-9}$

Данные записаны на пленку экспозит для переходов 240 и 260.

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S/048/60/024/012/010/011
B019/B056



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S/048/60/024/012/010/011
B019/B056

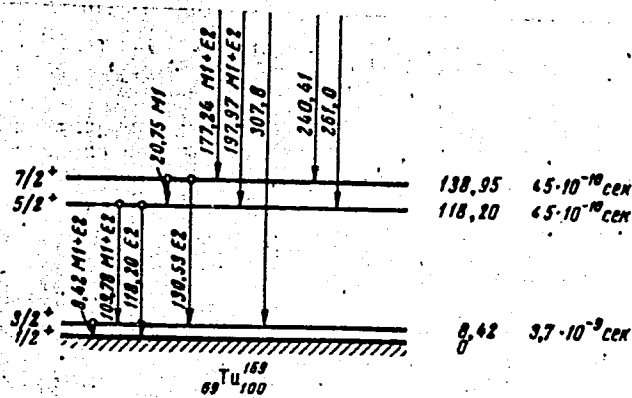


Рис. 3. Схема превращения $Yb^{169} \rightarrow Tu^{169}$. (Промя жизни уровня 472.91 keV по $3.2 \cdot 10^{-10}$ сек, как ошибочно указано на рисунке, а $1.4 \cdot 10^{-10}$ сек)

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S/057/63/033/002/011/023
B108/B186

AUTHORS: Afrosimov, V. V., Gladkovskiy, I. P., Kislyakov, A. I., and Petrov, M. P.

TITLE: A mass analysis of the current of neutral atomic particles ejected from the plasma in the "Alpha" machine

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 33, no. 2, 1963, 205 - 211

TEXT: Fast neutral particles with energies of 500 - 5000 ev were mass-analyzed by measuring the flight time of the particles as described in ZhTF, 30, 12, 1456, 1960. A magnetic mass analyzer was used to avoid difficulties in handling high-energy particles. The hydrogen plasma in the Alpha machine was found to be a source of a large number of impurity atoms. Since the impurity concentration varies with time and depends on the working conditions of the machine in the same way as the hydrogen concentration it can be assumed that the impurity and hydrogen atoms form in similar processes (recharging, desorption of gases from chamber wall, evaporation of wall material, etc.). The current of the impurity atoms increases at the end of the discharge. This may lead to an increase in impurity ion concentration of the plasma, and also to an increase of the Card 1/2

A mass analysis of the current...

S/057/63/033/002/011/023
B108/B186

current of particles on which the impurity ions are recharged. There are 4 figures.

ASSOCIATION: Fiziko-tehnicheskiy institut im. A. P. Ioffe AN SSSR, Leningrad (Physicotechnical Institute imeni A. P. Ioffe AS USSR, Leningrad)

SUBMITTED: February 2, 1962

Card 2/2

L 21707-66 EWT(1)/ETC(f)/EPF(n)-2/EWG(m) IJP(c) AT
 ACC.NR: AP6004884 SOURCE CODE: UR/0057/66/036/001/0102/0110
 AUTHOR: Afrosimov, V.V.; Ivanov, B.A.; Kislyakov, A.I.; Petrov, M.P.
 ORG: none
 TITLE: Investigation of the plasma concentration in the "Al'fa" installation with a probe beam of fast atoms
 SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 1, 1966, 102-110
 TOPIC TAGS: hydrogen plasma, plasma diagnostics, particle beam, neutral particle, atomic beam, plasma density, plasma magnetic field, plasma decay, plasma dynamics, plasma concentration
 ABSTRACT: The authors have employed their technique of plasma diagnosis with a fast atomic beam to investigate the hydrogen ion concentration in plasmas in the "Al'fa" installation over a wide range of operating conditions. The theory of the technique and the apparatus employed have been described in a previous paper by the authors (ZhTF, 36, 89, 1966/ see Abstract AP6004883/). For the present measurements the apparatus was so adjusted as to have a resolving time of 30 μ sec. Under all operating conditions the proton density rose rapidly to a maximum value of n_{\max} at time t_{\max} after initiation of the discharge, decreased less rapidly with irregular fluctuations until the discharge current fell to zero, and subsequently decreased exponentially with the time constant T . The variations with the discharge conditions (the gas pressure P_0 prior to the discharge, the strength H_z of the longitudinal magnetic field,
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L 21707-66

ACC NR: AP6004884

and the potential U on the capacitor bank feeding the eddy winding) of the parameters n_{\max} , t_{\max} , T , and the time $t_{0.5}$ during which the proton concentration was greater than half its maximum value are presented graphically and are discussed at some length. n_{\max} was proportional to P_0 and, for fixed P_0 , increased linearly with H_z . Values of n_{\max} up to nearly 10^{14} cm^{-3} were observed. The ionization was relatively independent of U and increased from about 42% for $H_z = 200 \text{ Oe}$ to approximately 85% for $H_z = 1 \text{ kOe}$. For $U = 10 \text{ kV}$, t_{\max} and $t_{0.5}$ reached minimum values of 0.5 and 1.4 millise, respectively, at about the same value (360 Oe) of H_z . T increased linearly with H_z from approximately 0.25 millise for $H_z = 200 \text{ Oe}$ to 0.8 millise for $H_z = 900 \text{ Oe}$. Mechanisms possibly contributing to the plasma decay are discussed and it is concluded that diffusion plays no appreciable part, that drift in the toroidal magnetic field makes the most significant contribution, and that recombination may be important if the plasma temperature at this stage is of the order of 0.2 eV. The authors thank V.Ye.Golant for valuable discussions and N.V.Fedorenko for his interest. Orig. art. has: 8 formulas and 9 figures.

SUB CODE: 20/

SUBM DATE: 22Jul65/

ORIG REF: 010/

OTH REF: 004

Card 2/2

I-16013-66 EWT(1)/ETC(f)/EPF(n)-2/ENG(m) IJP(c) AT
ACC NR: AP6004883 SOURCE CODE: UR/0057/66/036/001/0089/0101

AUTHOR: Afrosimov, V.V.; Ivanov, B.A.; Kislyakov, A.I.; Petrov, M.P.

ORG: none

TITLE: Active ^{2, 4, 5}diagnosis of a hot plasma by means of neutral particles

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 36, no. 1, 1966; 89-101

TOPIC TAGS: heated plasma, hydrogen plasma plasma diagnostics, plasma density, particle beam, neutral particle, atomic beam, charge exchange.

ABSTRACT: A technique for measuring the charged particle density of a hydrogen plasma with the aid of a beam of high energy (5-20 KeV) hydrogen atoms has been developed and tested by measuring plasma densities in the "Al'fa" installation. The method has the advantages of good sensitivity, negligible interference with the plasma and independence of the physical state of the plasma and the presence of magnetic fields. The injector consisted of an ion source, accelerating electrodes, electrostatic deflecting electrodes for directing the beam, a charge exchange chamber containing hydrogen at $(1-4 \times 10^{-4})$ mm Hg in which some of the ions were neutralized, and a transverse electric field which removed the unneutralized ions. After traversing the plasma the hydrogen atom beam passed through a transverse electric field which cleared it of any charged particles that it might have picked up, and a charge exchange chamber in which some of the atoms became ionized. The ions issuing from

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UDC: 533.9.07